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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,184	12/28/2001	John Durbin Husher	2193P	9431

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EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT PAPER NUMBER

2826

DATE MAILED: 04/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/034,184

Applicant(s)

HUSHER, JOHN DURBIN

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 07 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 16-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

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Serial Number: 10/034184 Attorney's Docket #: Mo15/2193P  
Filing Date: 12/28/01;

Applicant: Husher

Examiner: Alexander Williams

Applicant's Amendment in Paper # 8, filed 2/7/03, has been acknowledged.

This application contains claims 1-15 drawn to an invention nonelected with traverse in Paper No.5. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

The disclosure is objected to because of the following informalities: The cross-related applications information should be updated.

Appropriate correction is required.

REPEATED: Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited **to a single paragraph** on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Applicant is reminded of the proper content of an abstract of the disclosure.

**A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention**

**pertains.** If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

**Where applicable, the abstract should include the following:**

- (1) if a machine or **apparatus**, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

Claims 16 to 22 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 17, the use of "or" recite alternative structures. It is unclear and confusing to what structure is meant to be claimed.

In claim 16, it is unclear and confusing to what is meant by the phrase "an interconnect **on** the semiconductor substrate" and the phrase "the interconnect comprising at least one slot provided **in** the semiconductor substrate."

Any of claims 16 to 22 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:  
A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16, insofar as claim 16 can be understood, is rejected under 35 U.S.C. § 102(e) as being anticipated by Goruganthu et al. (U.S. Patent # 6,281,029 B1).

For example, in claim 16, Goruganthu et al. (figures 2 to 3B) specifically **figure 3B** show a semiconductor device **12** comprising: a semiconductor substrate **20,22**, the semiconductor substrate including a plurality of device structures (**310B, components within 20,22**) (see column 5, lines 43-60) thereon; and an interconnect **311** on the semiconductor substrate, wherein the interconnect is not part of the device structure, the interconnect comprising at least one slot (**portion with 311 not connected to any structure within 20,22**) provided in the semiconductor substrate and at least one metal (**310B portion within 311 not connected to any structure within 20,22**) within the slot.

Initially, and with respect to claims 21, 22, 28 and 29, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claims 21 to 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goruganthu et al. (U.S. Patent # 6,281,029 B1).

For example, in claim 23, Goruganthu et al. (figures 2 to 3B) specifically **figure 3B** show a interconnect on a semiconductor substrate **20,22** comprising: at least one slot (**311 shown not connected to any structures in the substrate**) provided in the semiconductor substrate; and at least one metal (**310B within the 311s not connected to any structure in the substrate**) within the slot, wherein the interconnect is not part of any of a plurality of device structure on the substrate. Goruganthu et al. fail to explicitly show a high current, high power interconnect on a semiconductor substrate. However, Goruganthu et al. does discloses the chip thinning removes substrate material useful for drawing heat away from the internal circuitry when the circuitry is running at high speeds (see column 3, lines 13-24). Note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). Applicant's doe not show the size of the interconnect should be of specific dimensions to provide high current and high power.

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For a circuit to run at high speed, it would be obvious to one of ordinary skill in the art at the time of the invention to use the teaching of Goruganthu et al.'s interconnect as shown as a high current, high power interconnect on a semiconductor substrate for the purpose of useful for drawing heat away from the internal circuitry when the circuitry is running at high speeds.

In claim 24, Goruganthu et al.'s semiconductor substrate comprises: a substrate region (**region of 20**); and an epitaxial (EPI) layer **22** over the substrate region, wherein the plurality of devices structures ((**components within the 22**) are provided in the EPI layer.

Initially, it is noted that the 35 U.S.C. § 103 rejection based on one metal and a plurality of metals, whether being two metal or three metals deals with an issue (i.e., the integration of multiple pieces into one piece or conversely, using multiple pieces in replacing a single piece) that has been previously decided by the courts.

In Howard v. Detroit Stove Works 150 U.S. 164 (1893), the Court held, "it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together...."

In In re Larson 144 USPQ 347 (CCPA 1965), the term "integral" did not define over a multi-piece structure secured as a single unit. More importantly, the court went further and stated, "we are inclined to agree with the solicitor that the use of a one-piece construction instead of the [multi-piece] structure disclosed in Tuttle et al. would be merely a matter of obvious engineering choice" (bracketed material added). The court cited In re Fridolph for support.

In re Fridolph 135 USPQ 319 (CCPA 1962) deals with submitted affidavits relating to this issue. The underlying issue in In re Fridolph was related to the end result of making a multi-piece structure into a one-piece structure. Generally, favorable patentable weight was accorded if the one-piece

structure yielded results not expected from the modification of the two-piece structure into a single piece structure.

In claims 25 to 27, Goruganthu et al.'s metal 310B represents the plurality of metals, whether being two metals or three metals.

Therefore, it would have been obvious to one of ordinary skill in the art to use the one metal and the plurality of metals whether being two metals or three metals as "merely a matter of obvious engineering choice" as set forth in the above case law.

As to claims 21, 22, 28 and 29, the grounds of rejection under section 103, see MPEP § 2113.

## Response

Applicant's arguments filed 12/28/03 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The insertion of Applicant's additional claimed language, for example, "in claims 10 and 16" cause for further search and consideration to make this action final.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION



FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/734,774,700,701,758,759,751-753,762- 767,147,76,328- 334,491,624,625,635,642,637,720,565,773	9/17/02 4/28/03
Other Documentation: foreign patents and literature in 257/734,774,700,701,758,759,751-753,762- 767,147,76,328-334, 491,624,625,635,642,637,720,565,773	9/17/02 4/28/03
Electronic data base(s): U.S. Patents EAST	9/17/02 4/28/03

***Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.***

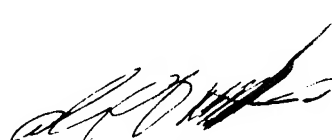
Any inquiry concerning this communication or any earlier communication from the examiner should be directed to ***Examiner Alexander Williams*** whose telephone number is ***(703) 308-4863***.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center 2800 receptionist** whose telephone number is **(703) 308-0956**.

4/29/03

A handwritten signature in black ink, appearing to read 'Alexander O. Williams', with a stylized flourish at the end.

Primary Examiner  
Alexander O. Williams